December 22, 2003

**Addendum to LSA, Rev. 9, 03/03**

Note-- The following section shall replace section 6.1.21 and become part of the attached Limited Site Assessment Request for Proposal.

## SECTION 6.0 PROPOSAL AND WORK SPECIFIC DEFINITIONS

### 6.1 PROPOSAL DEFINITIONS

#### 6.1.21 SATURATED ZONE (Permeameter, Grain Size, Slug Out Test)

This item will include the cost to conduct a minimum of two permeameter tests per site. Each test must be performed on a soil sample collected from the saturated zone. If any hydrologic test other than a permeameter test is requested, it will be indicated on page 2 of Exhibit 2.

A grain size analysis utilizing ASTM method D 422-63(98) must be conducted on each sample prior to performing the permeameter tests. This information should be used to determine whether to conduct a constant-head permeameter test or a falling-head permeameter test on each sample. A constant-head permeameter test should be conducted on noncohesive sediments with hydraulic conductivities greater than approximately $10^{-3}$ centimeters per second. Constant head tests must be conducted in accordance with ASTM Standard Test Method D 2434-68 (2000). A falling-head permeameter test should be conducted on cohesive sediments with hydraulic conductivities lower than approximately $10^{-3}$ centimeters per second. Falling-head tests must be conducted in accordance with ASTM Standard Test Method D 5084-00-e1. If the appropriate test is not conducted, reimbursement for the incorrect test will be denied.

Under certain circumstances the KDHE Project Manager may request two grain size analysis be performed using ASTM method D 422-63(98). Grain size analysis will include hydrometer test if greater than 70 percent of the mass of the sediment passes through the #200 sieve. Estimated values for hydraulic conductivity, transmissivity and storativity must be provided using information from the grain size analyses.

On occasion two slug out tests may be requested. Slug-out tests must be conducted using a pneumatic or weighted slug, or by removing a known volume of water from the well. Wells must be properly developed and allowed to return to static conditions before conducting the slug test. Development water is not to be used as the slug.

Tests must be conducted in different wells. Do not introduce any water into the formation. The slug-out tests must be conducted in accordance with guidelines outlined in "EPA Method 9100 3.4 Single well tests."

Do not conduct the second slug test if the initial one fails unless directed otherwise by the KDHE Project Manager.

Laboratories which perform analysis using ASTM methods must be accredited for the specific method(s) by the Army Corp of Engineers or an approved equivalent accreditation entity.

Soil samples collected to determine the physical properties must be collected from a zone that is similar to the zone of probable petroleum migration but located in an area that has not been impacted by any released substance.